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EXAMINER

TSOY, ELENA

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 06/04/2003

*B*

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/892,420

Applicant(s)

WONG ET AL.

Examiner

Elena Tsoy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 25-39 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-24 is/are allowed.
- 6) ☒ Claim(s) 1-12 and 40 is/are rejected.
- 7) ☒ Claim(s) 41 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 6) ☐ Other:

***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-24, 40-41, drawn to a method of forming an ablative structure, classified in class 427, subclass 407.1.
- II. Claims 25-39, drawn to an ablative structure, classified in class 428, subclass 314.4.

***Distinctness***

The inventions are distinct, each from the other because:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by materially different process comprising applying an ablative material by trowelling or casting.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mark Elchuk on March 17, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-24, 40, 41. Affirmation of this election must be made by applicant in replying to this Office action. Claims 25-39 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1, 2, 7** are rejected under 35 U.S.C. 102(b) as being anticipated by McGinnis et al (US 5,603,990).

McGinnis et al disclose a method of forming an ablative structure, the method comprising applying two intumescent coating layers of a second component over a primer layer of a first component (See column 7, lines 43-51) for thermally protecting a substrate having a surface exposed to a flame environment (See column 1, lines 13-23; column 3, lines 37-40). Upon exposure to the fire, the second intumescent component forms insulative **char** foam to give superior insulation properties (See column 2, lines 50-55), i.e. the second component is also low temperature ablative component. McGinnis et al read on claim 1 for the following reasons: a first layer of the second component can be considered to be a layer (a) of claim 1 of a first quantity of low temperature ablative material (and intumescent material) applied to a primed substrate, and a second layer of the second component can be considered to be a layer (b) of claim 1 of intumescent material mixed with a second quantity of low temperature ablative material applied over the first quantity of low temperature ablative material since claim 1 does not require that

- (i) a first quantity is different from a second quantity of a low temperature ablative material; and
- (ii) a layer (a) does not contain an intumescent material.

As to claim 2, the low temperature ablative intumescent component can be applied to the substrate by spraying (See column 7, line 28).

As to claim 7, the low temperature ablative intumescent component is cured on the substrate (See column 6, lines 39-40).

3. **Claim 40** is rejected under 35 U.S.C. 102(b) as being anticipated by Amos et al (US 4,658,728).

Amos et al disclose a method of forming an ablative structure, the method comprising the steps of applying an ablative heat shield containing an intumescent material to a substrate (See column 1, lines 32-42). Such heat shields are known for the protection of space vehicles at re-entry to the earth's atmosphere (See column 1, lines 36-37), i.e. the ablative heat shield is of low temperature ablative material.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 3-6, 8-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over McGinnis et al (US 5,603,990).

McGinnis et al, as applied above, fail to teach that the thickness of intumescent-ablative component is between approximately 0.05 and 0.75 inches (Claim 3) or approximately 0.25

inches (Claim 4); the intumescent material is mixed between approximately 10 and 50 percent by weight with the low temperature ablative material (Claim 5); the intumescent material is mixed between approximately 25 and 40 percent by weight with the low temperature ablative material (Claim 6); the intumescent-ablative component is cured at room temperature (Claim 8); the intumescent-ablative component is cured onto the substrate between approximately 10 minutes and 24 hours (Claim 9); the intumescent-ablative component is cured onto the substrate between approximately one and 4 hours (Claim 10).

As to claims 3, 4, McGinnis et al teach that coating of the intumescent-ablative component provides protection even at thickness of less than 50 mils (0.05 inches) compared to prior art coatings of at least 200 mils (See column 2, lines 10-11, 28-33). In other words, clearly coating of the intumescent-ablative component having thickness of more 50 mils would provide better fire protection. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used coating of the intumescent-ablative component provides protection having thickness of more than 50 mils including thickness of claims 3 and 4 with the expectation of providing the desired fire protection in the absence of a showing of criticality.

As to claims 5, 6, 8-10, one of ordinary skill in the art knows that concentration of components in a coating composition, curing time and temperature are result-effective parameters in a coating process.

It is held that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum values of the relevant concentration parameters (including those of claims 5, 6, 8-10) in a method of McGinnis et al through routine experimentation in the absence of a showing of criticality.

6. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over McGinnis et al (US 5,603,990) in view of Deogan et al (US 5,900,281).

McGinnis et al, as applied above, fail to teach that the intumescent material is ammonium polyphosphate.

Deogan et al teach that well known intumescent-ablative systems containing ammonium polyphosphate as intumescent material swell to produce a char more than five times the original thickness providing superior thermal efficiency (See column 1, lines 57-67; column 2, lines 1-4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used well known intumescent-ablative systems containing ammonium polyphosphate as intumescent material as a second component in a method of McGinnis et al with the expectation of providing the desired superior thermal efficiency, as taught by Deogan et al.

7. **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over McGinnis et al (US 5,603,990) in view of Tzur (US 4,632,865).

McGinnis et al, as applied above, fail to teach that the low temperature ablative material is cork-based.

Tzur teaches that intumescent-ablator comprising a strong ablator containing hydrated inorganic salts and cork (See column 3, lines 40-46), combined with an intumescence agent

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provides better heat insulation properties than either of the systems by itself (See column 2, lines 34-42), e.g., a duration of time up to 30 minutes and more and which is useful for protecting various media objects (See column 1, lines 41-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used intumescent-ablator comprising a strong ablator containing hydrated inorganic salts and cork, combined with an intumescence agent as a second component in a method of McGinnis et al with the expectation of providing the desired better heat insulation properties than either of the systems by itself, e.g., a duration of time up to 30 minutes and more, as taught by Tzur.

*Allowable Subject Matter*

8. **Claims 13-24** are allowed.

The following is an examiner's statement of reasons for allowance: claim 13 is allowed because the prior art of the record does not teach or suggest a method of forming a multilayer ablative structure wherein intumescent material is disposed within a low temperature ablative material in increasing amounts towards an outer surface of the ablative structure, thereby forming a gradient of the intumescent material. Claims 14-24 are allowed as further limiting allowed claim 13. Closest prior art of McGinnis et al teaches a multilayer ablative structure as claimed except for forming a gradient of the intumescent material.

**Claim 41** is objected to as being dependent upon a rejected base claim 40, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Reasons for allowance are the same as for claim 13.



Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

*Conclusion*

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is (703) 605-1171. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

*Elena Tsoy*

Elena Tsoy  
Examiner  
Art Unit 1762

May 29, 2003